UNDRO NEWS

OFFICE OF THE UNITED NATIONS

BUREAU DU COORDONNATEUR
DES NATIONS UNIES POUR LES

Editorial

On 24 October 1990, the United Nations will be celebrating its 45th Anniversary. When the Charter of the United Nations was ratified by France, China, the United Kingdom, the Union of Soviet Socialist Republics and the United States of America, as well as by other signatory countries, on 24 October 1945, the words spoken by President Franklin D. Rooselvelt in 1944 could still be heard: ***"Peace, like war, can succeed only where there is a will to enforce it and where there is available power to enforce it."*** *Today, the "echo" of these words is more present and meaningful than ever and induces us to look back at certain pages of our past history to try and understand human tragedies which affect us now. Torn and divided by a first war which caused the death of ten million people, the world committed itself to abolishing war in the future. In spite of that undertaking, a second world war broke out, with a far heavier toll (30 to 60 million victims), during the course of which the chemical gases of 1914-18 were replaced by the atomic bomb. Since then, hundreds of localized conflicts have left in their wake millions of displaced persons and refugees.*

These were man-made tragedies. In the case of natural disasters, regarded for centuries as uncontrollable acts of God, public awareness has progressively aroused, and major international assistance efforts were gradually mounted, with encouraging results. In 1971, recognizing the necessity to strengthen and render more effective the collective efforts of the international community to provide assistance in cases of natural disasters or other emergency situations, the United Nations decides upon the creation of UNDRO (Office of the United Nations Disaster Relief Coordinator). 1990 sees the launching, by the United Nations, of the International Decade for Natural Disaster Reduction (IDNDR), which aims at reducing, through concerted international action, within the last decade of this century, loss of life, property damage and social and economic disruption caused by natural disasters. The paradox is that, in the 20th Century, preventive measures to limit the consequences of disasters caused by armed conflicts still seem to escape us, in spite of the magnitude of a strong collective will and in spite of action undertaken both by humanitarian organizations and governments.

Perhaps the methods already employed in natural disaster reduction, and to be further developed during the IDNDR, such as early warning and rapid

Le 24 octobre 1990, les Nations Unies célèbrent leur 45ème anniversaire. A l'aube de leur existence, lors de leur ratification le 24 octobre 1945 par la Chine, les Etats-Unis, la France, le Royaume Uni et l'Union des Républiques Socialistes Soviétiques, ainsi que par la majorité des autres pays signataires, les paroles prononcées en 1944 par le Président Franklin D. Roosevelt, résonnent tel un écho : ***"Pour assurer la paix comme pour gagner la guerre, il faut la volonté d'aboutir ainsi que les moyens d'imposer cette volonté"****. *Aujourd'hui, cet écho est plus que jamais présent et parlant et nous sommes tentés de nous remémorer certaines pages du passé afin de mieux comprendre les drames qui nous touchent actuellement. Au lendemain d'une première guerre qui l'a divisé et déchiré au prix de 10 millions de morts, le monde s'était engagé à ne plus faire la guerre. Malgré cela, une seconde guerre a sévi, au bilan plus lourd encore (30 à 60 millions de victimes) au cours de laquelle les gaz chimiques des années 14-18 ont cédé la place à la bombe atomique. Depuis la fin de cette guerre, des centaines de conflits localisés se sont soldés par des millions de personnes déplacées et de réfugiés.*

Il s'agit là de catastrophes provoquées par l'homme. D'autres catastrophes, appelées "naturelles", longtemps considérées comme incontrôlables, font l'objet d'une prise de conscience et d'un effort d'entraide internationale dont les résultats sont encourageants. En 1971, vu la nécessité de renforcer et de rendre plus efficaces les efforts collectifs de la communauté internationale dans le domaine de l'assistance en cas de catastrophe ou d'autres situations revêtant l'aspect d'une catastrophe, les Nations Unies créent l'UNDRO (Bureau du Coordonnateur des Nations Unies pour les secours en cas de catastrophe). 1990 est l'année du lancement, par les Nations Unies, de la Décennie internationale de la prévention des catastrophes naturelles (IDNDR), dont le but est de réduire, d'ici la fin du siècle, par une action internationale concertée, les pertes en vies humaines, les dégâts matériels et les perturbations sociales et économiques causés par les catastrophes naturelles. Paradoxalement, malgré l'ampleur d'une volonté collective, malgré les actions entreprises tant par les organismes humanitaires que par les gouvernements, l'homme du vingtième siècle semble encore "impuissant" à prévenir, afin d'en limiter les conséquences, les catastrophes issues de conflits armés.

Les méthodes déjà employées afin d'atténuer les catastrophes naturelles, qui seront perfectionnées au cours de la Décennie, tels que les systèmes d'alerte et d'évaluation rapides, pourraient peut-être servir de modèle

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**NDT : Traduit par la Rédaction.*

assessment, could serve as a model for containing man-made emergencies too. This refers in particular to early warning of flows of refugees and displaced persons, at present being studied by the United Nations. Such mechanisms, coupled with the peace-making and peace-keeping instruments already foreseen in the UN Charter, could help to address some of the difficult humanitarian aspects of armed conflicts. On the eve of this 45th Anniversary, concerted action of Member States proves that the United Nations remains the privileged instrument to help solve the fundamental problems which are our common bond on this planet, in times of peace as in times of war.

pour maîtriser les situations d'urgence provoquées par l'homme. Ceci permettrait en particulier d'être prêt à faire face, en temps utile, à l'afflux de personnes déplacées et de réfugiés, sujet actuellement à l'étude aux Nations Unies. De tels mécanismes, associés aux instruments de la mise en place et du maintien de la paix, déjà prévus par la Charte de l'ONU, pourraient répondre à certains aspects des graves questions humanitaires posées par le conflit armé. A la veille de ce 45ème anniversaire, l'action commune des Etats Membres prouve que les Nations Unies demeurent l'instrument privilégié pour résoudre les problèmes fondamentaux qui, en temps de paix comme en temps de guerre, nous lient tous sur cette terre.

UNHCR/E. Birrer

Displaced persons on the way back to their village of origin.

UNDRO NEWS (ISSN 0250-9377)

Published every two months by the Office of the United Nations Disaster Relief Co-ordinator (UNDRO).
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Publié tous les deux mois par le Bureau du Coordonnateur des Nations Unies pour les secours en cas de catastrophe.
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Contents

Pages

Editorial 2
Iran Earthquake 4
Medical Care for Earthquake Victims 6
UNDRO at Work 10
The Decade: A Catalyst for Action 12
Toward More Effective Early Warning Systems 14
UNDRO Publications List 19

Iran Earthquake

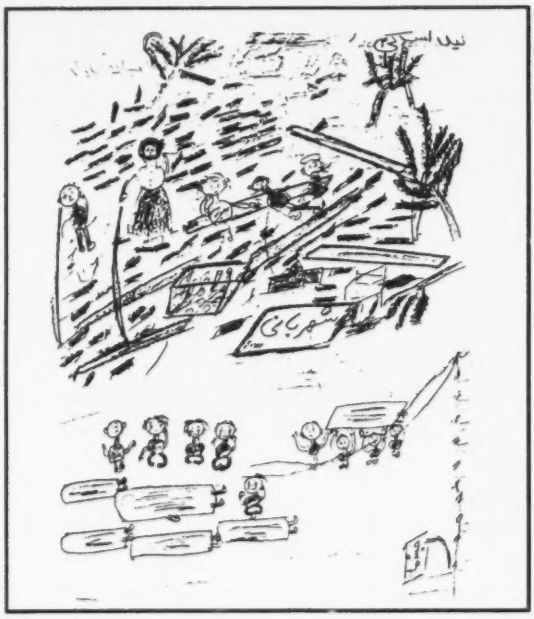
On 21 June 1990, a major earthquake measuring 7.3 on the Richter Scale, struck the provinces of Gilan and Zanjan, in northwestern Iran. In the most-affected area, located between the cities of Rasht, Qazvin and Zanjan, 60 to 90% of the houses collapsed. On July 28, the official estimation of losses was 40,000 dead, 60,000 injured and 500,000 homeless. In 1962, an earthquake of a similar magnitude which occurred in the same area, killed 12,000 people. The request for disaster co-ordination assistance within the country was received by UNDRO in the mid-afternoon of 21 June, and two delegates left by the first available flight for Tehran, on 22 June. The United Nations Disaster Relief Co-ordinator, Mr. M'hamed Essaafi, appointed by the Secretary-General as his Special Representative for the emergency in Northern Iran, left on 25 June for a five-day mission to the country, to meet with Representatives of the Government and to assess the situation on the spot. During his stay, he also chaired the Inter-Agency Co-ordination meetings held between the United Nations entities present in Iran.

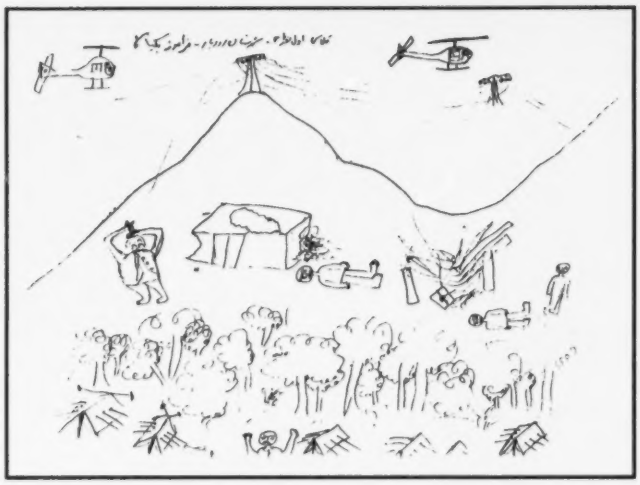
National response to this disaster was carried out on a large scale and in a most efficient manner. The military, the Revolutionary Guards, the Red Crescent, the Ministry of Health, the Ministry of Transportation, and other national bodies were rapidly mobilized. Since the earthquake occurred in the middle of the night, it was not easy to identify the most affected areas immediately, and organized rescue started at dawn the following day. Also, many of the administrators who would have had the task of helping the victims were themselves among the casualties. As in most disasters, it was the

Rudbar

UNDRO/J. Tomblin

In Rudbar, Manjil, and Loushan, the worst-affected area, the houses and business premises were mostly of one or two (rarely three) floors, with bricks and mortar built into, but poorly anchored to, steel frames. Building collapse in the towns resulted primarily from the rupture of poorly welded connections in the steel frame, and from the heavy weight of ceilings and especially roof masonry. In the surrounding mountain villages, where most of the affected population lived, construction was mainly of irregularly shaped lava blocks set in dried mud, or of sun-dried mud bricks with similar "cement". The roofs in these villages were of thick layers of dried mud spread upon reeds laid across closely spaced horizontal poles, with very low resistance to earthquakes.





Drawings by Iranian children who were survivors of the earthquake

survivors who carried out early rescue, saving neighbours or family members buried under the rubble. An Earthquake Relief Task Force was immediately established in the President's Office in order to co-ordinate the Ministries' relief efforts, as well as that of the armed force of the High Council for Defence, and the Revolutionary Guards. Disaster Co-ordination Centres were set up within each Ministry, such as the one dealing with international aid at the Ministry of Foreign Affairs. Relief helicopters were pressed into service early, but adverse weather conditions and the geography of the affected area greatly complicated airlift operations, making it impossible to reach some of the villages (situated in high mountainous areas) until 23 or 24 June. However, on 24 June, on the team's first visit to the affected area, a new helicopter landing field had been established in Rudbar, with extensive helicopter traffic arriving and leaving every few minutes. On 23 June, the Air Force Command stated that up to the morning of 22 June (36 hours after the disaster), over 6,000 critically wounded-victims, as well as 3,000 tons of goods had been transported.

Throughout the country, special committees for voluntary relief to earthquake victims were set up. Rescue teams and relief supplies were dispatched to the disaster-stricken area, and on UNDRO's second visit to the field on 27 June, there seemed to be a surplus of both rescue workers and donated relief items.

By 24 June, following the deployment of heavy equipment by the Ministry of Transportation, all main roads in the area were cleared

(Continued on page 8)

Medical Care for Earthquake Victims

by Eric K. Noji, Md., M.P.H.
Assistant Professor of Emergency Medicine

A number of recent earthquakes such as the 1985 Mexico City earthquake, the 1986 El Salvador earthquake and the 1988 earthquake in Soviet Armenia demonstrate that the collapse of reinforced-concrete buildings is a significant and continuing problem. Traditionally, search and rescue (SAR) operations have been carried out, for the most part, by untrained persons such as relatives, neighbours, or local volunteer groups. It is clear that the increasing frequency of disasters in large urban areas, coupled with the collapse of reinforced concrete buildings, calls for a more professional approach, particularly for specialized medical and rescue skills.

Past research has shown that factors determining the number of people killed after a building collapses include entrapment, the severity of their injuries, how long they can survive without medical attention, and time to rescue and medical treatment. Rescue and medical personnel operate under a very constrained time element. Following a catastrophic earthquake, research has shown that 85-95% of the live recoveries are made within the first day, while, beyond that time, the rate of recovery of live victims drops off very sharply. Estimates of survivability for entrapped victims buried under collapsed earthen buildings in Turkey and China, indicate that within two to six hours, less than 50% of those buried are still alive. Although it is not always possible to determine whether a trapped person died immediately or survived for some time under the debris, it is undoubtedly true that more people might have been saved if they had been extricated sooner. In everyday trauma we talk about the "Golden Hour." For victims of building collapse,

United Nations/Sygma/J.P. Laffont

Earthquake victim carried from a destroyed building in Guatemala City.

we can talk about a "Golden Twenty-four Hours."

Successful search and rescue endeavours consist of rapid location, access, extrication, stabilization and transportation of victims. Since victims of building collapse may be trapped for hours, if not days, it is important that on-site medical personnel be trained to resuscitate and stabilize such patients while they are being actively extricated. In the case of Mexico City, more than 400 major buildings were seriously damaged, and there were more than 40 major collapses of reinforced-concrete buildings. It is estimated that more than 10,000 people were trapped in collapsed buildings as a result of the earthquake. In Armenia, more than 40,000 persons were trapped. When comparing the number of injuries to the number of available trained medical personnel, it becomes self-evident that what scarce resources are available must be used where they will do the most good. In other words, medical personnel must be able to rapidly determine approximate number of victims, probable locations of survivors, and potential for survival.

For those trapped survivors, there are serious problems with limb compression and dust inhalation. Some of these persons will require in-field amputation in order to extricate them. Therefore, search and rescue must be combined with effective immediate emergency medical care. Such medical care will of necessity be austere, and conditions usually will not allow for definitive care of minor or moderate injuries. Any field medical intervention should be oriented toward stabilization of immediate life threats (eg. maintenance of airway patency, management of external hemorrhage) and relief of severe pain.

Medical teams from many different countries have been used in past earthquake rescue operations. Unfortunately, with only a few exceptions, most of these teams had no previous earthquake or heavy urban rescue experience. This lack of experience points out the need for greater professionalization of disaster medicine in earthquakes, better equipment, techniques and training. The ultimate goal should be the development of well-trained, highly specialized rescue and medical personnel, preferably working together as a combined unit and located in areas of greatest seismic risk.

Members of building collapse rescue teams should be very familiar with the following topics:

- Causes of building collapse (e.g. earthquakes, wind, blast);
- Building types and construction (e.g. building typology by structural type, patterns of failure, characteristics of construction materials);
- Current state of the art in collapsed building search and rescue (e.g. new developments in location and extrication techniques and equipment);
- Injury patterns observed in building collapse (e.g. distribution of types of injury, morbidity/mortality time trends, crush injury/syndrome);
- Emergency medical treatment for victims of building collapse (e.g. first responder responsibilities, on-site treatment/triage, prevention and treatment of rhabdomyolysis (injury to muscle cells) communications and transportation);
- Health considerations for rescue and medical workers (e.g. physical hazards in the unstable collapse environment, precautions regarding food and water in less developed countries).

Necessary knowledge for effective rescue and medical care

For guiding future earthquake rescue and medical operations, it is necessary to have information about the actual location of the victims in the collapsed structure as well as specific details about the extrication process itself. Knowledge of collapse conditions helps set rescue and medical priorities. The construction of a building gives some indication of the way it may collapse as a result of a blast, earthquake, cyclone, or other disaster. Buildings of the same class and type of construction collapse in much the same way, and common factors are present. It is important that rescuers and disaster medicine specialists study these factors, since this knowledge will prove helpful when extricating and treating building-collapse casualties.

For example, almost all types of damaged buildings will contain voids or spaces in which trapped persons may remain alive for comparatively long periods of time. To know where these safe places may be, it is necessary to know the characteristics of various types of construction. Victims are best able to survive in V-shaped and lean-to voids, and by searching there first, rescue personnel have a better chance of reaching survivors in time.

It is not enough to know only where to find potential survivors. There should be no delay in instituting treatment for patients even when they are still entrapped. Rescue and medical personnel must know what to do once these persons are

(Continued on page 18)

Iran Earthquake

(Continued from page 5)

of the rubble caused by extensive landslides, and vans equipped with wireless communications had been dispatched from nine provinces to Gilan and Zanjan to restore communication with the affected area.

The Red Crescent Society of the Islamic Republic of Iran (RCSIRI) played a major role in providing local relief personnel and equipment and in distributing international aid sent to the disaster-stricken country.

UNDRO/J. Tomblin

In Manjil, many of the houses totally collapsed.

UNDRO undertook three missions from Tehran to the disaster area for field assessment of damage and needs. In a meeting on 23 June with the Deputy Minister Responsible for Disaster Co-ordination in the Ministry of Foreign Affairs, the UNDRO delegates were given a list of relief flights to date and were referred to the RCSIRI for details on field operations and relief needs. A meeting was immediately convened with the Director General and senior staff of the RCSIRI during which priority needs were identified. It was stated that at this stage food and search and rescue services were not needed at the international level. Progressively, as the full scale of the disaster became known, quantities of relief needs were increased and priorities adjusted. On the second day of their mission to Iran, the UNDRO delegates accompanied senior officials of the RCSIRI and LRCS on an all-day trip to Qazvin, Loushan, Manjin and Rudbar. In each town, they were given the best available estimates of fatalities, hospitalized and homeless persons, as well as information on priority needs. Supplies of food and clothing were declared to be sufficient by the local authorities. In Rudbar, there was an abundance of rubble-clearing equipment and from the RCSIRI's headquarters, some 3,500 search and rescue volunteers were deployed in the many surrounding mountain villages, as soon as debris from landslides was removed from the steep and tortuous access roads. Military helicopters were arriving and departing every few minutes. The overall impression of the UNDRO team was that of a highly-disciplined and effective massive relief effort.

On June 27, the second UNDRO field mission to the same area included visits to Zanjan and to some of the mountain villages which were devastated and where rescue opera-

Airlifts from Pisa

In three UNDRO airlift operations, over 90 tons of relief supplies were flown from the UNDRO Supply Depot in Pisa, Italy, to Iran. On the third day of the disaster, an aircraft carrying relief goods from the Pisa warehouse was among the very first emergency flights to land in Iran. A second DC-8 plane chartered by UNDRO took off on 27 June. Thanks to the generosity of the Japanese Government, an additional 20 tons of tents and blankets from the Pisa warehouse were sent to Tehran on 29 June. A total of 140 tents, 33,000 blankets, 2,000 jerrycans, 180 family kits, 110 rolls of polyethylene, 30 water tanks and 16 generators, gifts of Italy and Japan, were distributed to the victims. The total cost of the operation was evaluated at approximately US $700,000.

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Following the earthquake, the Government of the United States contacted UNDRO, on 5 July in order to provide 40 water containers having a capacity of 3,000 gallons (approximately 11,500 litres) to the victims. This equipment was stocked in the American military camp in Pisa, close to the UNDRO warehouse. It was handed over to UNDRO staff in Pisa, and immediately transferred to Rome's Fiumicino airport, from where it was airlifted, free-of-charge, by Iran Air. On 15 June, the UNDRO/UNDP Resident Representative in Tehran, took delivery of the containers for distribution by the Iranian Red Cross.

tions were still in progress under difficult climatic and geographical conditions.

A third extended trip to the disaster area was undertaken by UNDRO and UNDP senior officials on 29 June, in order to inspect more closely the nature of the damage to buildings as well as the progress made with the setting up of relief camps.

Following the earthquake and in order to ensure close co-operation and information interchange between the United Nations agencies represented in Iran, an inter-agency emergency group was established, consisting of representatives from the UNDP office in Tehran, UNDRO, WHO, UNICEF, WFP, UNHCR, UNOCA*, and the League of Red Cross and Red Crescent Societies. The inter-agency emergency group met six times between 23 June and 5 July. At the end of the emergency phase, the group continued its work in co-ordinating international assistance for the rehabilitation and reconstruction phase.

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A master plan for reconstruction was announced by the Government of Iran, who asked the Secretary-General of the United Nations to designate UNDP "as the focal point for co-ordination of the international co-operation for reconstruction of the quake-stricken areas". The UNDP Resident Co-ordinator in Tehran was asked to channel all international aid available to assist the national technical authorities. UNDRO's assistance was requested by UNDP to co-ordinate the contributions by international agencies and bilateral sources for post-disaster reconstruction and mitigation activities. The United Nations Centre for Human Settlements (HABITAT), the United Nations Organization for Industrial Development (UNIDO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank were requested to submit to UNDP, Tehran, and to UNDRO, the names and particulars of suitable experts. The main requirements were:

- to examine the suitability of present sites (especially Rudbar) for reconstruction;
- to analyse reasons for structural failure or damage in the recent earthquake;
- to recommend building code modifications;
- to identify the most appropriate future building designs and construction materials;
- to develop a programme for the training of building inspectors and small builders, and organize a public information programme on methods for improving the earthquake resistance of typical local housing.

This plan is expected to be ready at the beginning of September 1990. In the short to medium-term, the major part of the plan addresses the problem of housing reconstruction because of the urgency in this sector (approximately 500,000 persons are, for all practical purposes, homeless). The Iranian Government has estimated that roughly 90,000 new houses must be built, and a further 30,000 need repairs. ■

Foreign Relief Teams

The Red Crescent Society of the Islamic Republic of Iran was responsible for the reception of all foreign relief teams which were deployed from Tehran airport to the affected area. These teams consisted mainly of specialists in search and rescue or medical services, and in assessment of building failures and structural damage.

The UNDRO delegates met with some of them on 25 July. At that time, the various search and rescue teams had been working for nearly 24 hours with local teams but without finding many more survivors. This was mainly due to the fact that the nature of the collapses had left very few cavities in which trapped victims could remain alive. What was most needed was the capacity to search large areas, and the deployment of local rescue teams to the spots where survivors were most likely to be found.

The foreign medical teams were able to set up first-aid stations and some field hospitals in the area. They worked side-by-side with the Iranian medical teams.

In a letter to Mr. Javier Pérez de Cuéllar, Mr. Ali-Akbar Velayati, Minister for Foreign Affairs of the Islamic Republic of Iran, conveyed the appreciation of the Government and people of his country for the Secretary-General's concern and efforts following the earthquake.

He also expressed his gratitude to the Office of the United Nations Disaster Relief Co-ordinator, as well as to all United Nations agencies, for their "tireless endeavours in providing and co-ordinating emergency assistance to the survivors of this destructive earthquake."

**Office of the Co-ordinator for United Nations Humanitarian and Economic Assistance Programmes relating to Afghanistan*

UNDRO at Work

(June - July 1990)

RELIEF: MOBILIZATION AND CO-ORDINATION

■ **Angola**: An UNDRO logistics expert arrived in Luanda on 27 July 1990, for a 10 month assignment with the UN Emergency Working Group. He will provide technical assistance to Angolan Government relief agencies, UN system and NGOs. This mission follows the recommendations of a UN Inter-agency mission in Southern Angola and is financially supported by the Swedish Government.

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❐ **Computer equipment** (funded by the Swedish Government through UNDRO) was set up in the Angolan National Emergency Unit at the end of July.

UNDRO will dispatch a computer specialist in September, to develop the contribution data management software and to train the local staff. The total cost of the project, (financed by the Governments of Sweden and the United Kingdom) amounts to about US $60,000.

■ **Caribbean**: "Arthur", the second tropical depression of the 1990 Atlantic hurricane season, hit Trinidad and Tobago and Grenada on 25 July. UNDRO's delegate (Pan Caribbean Disaster Preparedness and Prevention Project Manager), monitored the situation from the early stages, and kept in close contact with the relevant countries. UNDRO issued two Information Reports.

■ **China:** Following a series of floods, rainstorms and typhoons in several provinces of China (mainly Hunan, Shaanxi and Sichuan) from late June to early July, the UNDP/UNDRO Resident Representative closely co-operated with Chinese authorities, which had welcomed international assistance. UNDRO issued five Situation Reports.

■ **Lebanon:** UNDRO convened an *Information Meeting on Lebanon*, in Geneva, on 26 June. The meeting was chaired by Mr. F. Mayrhofer-Grunbuhel, Director of UNDRO and Deputy to the Co-ordinator who was himself on assignment in Iran as Special Representative of the Secretary-General for the earthquake emergency. Delegates from 17 donor governments and the European Economic Community attended the meeting, which was addressed by Dr. A. El-Rassi, Minister of Health and Social Affairs and President of the High Relief Committee, and Mr. Abu Jawdeh, Officer-in-Charge of UNDP Beirut. Dr. El-Rassi stated that an urgent rehabilitation and reconstruction programme was in no way premature and called on donor governments, inter-governmental and non-governmental organizations and others, to participate actively in all rehabilitation and reconstruction programmes, present and future.

Further participants from Lebanon, representatives of the United Nations, international and local organizations, gave additional information on the general situation and on their activities.

Violence in East Beirut over the last four months has caused tremendous losses, with over 1,500 dead, 3,500 wounded, and 24,050 families displaced. Destruction of, and damage to, private property and the public infrastructure is estimated at well over US $500 million.

■ **Liberia:** UNDRO is in the process of planning and preparing for an early resumption of relief operations in Liberia, within 48 hours of the evacuation order being lifted by the Secretary-General.

The four-member UNDRO Liberia relief team evacuated from Monrovia with the remaining UN personnel, has now been increased to eight. Total funding for the team is being provided by the Government of the United Kingdom. The team, which has been redeployed in Guinea and Sierra Leone, to assist the World Food Programme (WFP) operations relating to the Liberia crisis, is on permanent standby for an immediate return to Liberia. It will be working closely with Mr. Michael Heyn, the United Nations Resident Co-ordinator in Liberia, who has recently been appointed Special Co-ordinator of Emergency Relief Operations for Liberia. Before evacuation, the UNDRO relief team assisted approximately 41,000 displaced Liberians, often in extremely hazardous and difficult conditions.

Meanwhile, UNDRO will continue to issue Situation Reports during the interim period. UNDRO Situation Report n° 14 was transmitted on 27 July 1990.

■ **Mozambique**

❐ **An UNDRO officer carried out a mission to Mozambique** from 17 to 24 June, to review the UNDRO programme in the country. He met with Mozambican Government officials, representatives of major donor governments and UN officials, and undertook field visits.

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❐ **European Economic Community (EEC) Contribution:** After the completion of an EEC-funded operation for the procurement and transportation of relief supplies which benefited approximately 170,000 displaced persons in five provinces of Mozambique in January 1990, the EEC has made another contribution of 1 million Ecus to UNDRO to carry out a similar operation.

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❐ **Rehabilitation of a Warehouse in Maputo:** The Swedish Government contributed US $226,000 in 1989 for an UNDRO project to rehabilitate and equip a warehouse, as well as to train Mozambican Warehouse personnel. Rehabilitation of the warehouse has now been completed.

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❐ **Warehouse Management Expert:** The Swiss Disaster Relief Unit has extended by one year the secondment of its expert to UNDRO, who is currently working to equip the newly rehabilitated warehouse and to prepare a training seminar on warehouse management.

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❐ **Contribution from the Irish Government:** The Irish Government has pledged to UNDRO, for 1990, an amount of 25,000 Irish pounds (about US $40,000) for the acquisition of relief supplies to be distributed to displaced persons in Niassa province.

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❐ **Provision of air transport:** The UNDRO-managed aircraft flew a total of 123 hours to affected provinces in Mozambique in April and May. From June 1989 to May 1990, the aircraft flew an average of 36 hours per month, completing a total of 63 trips over this one year period. Thanks to a contribution by the Government of Canada amounting to US $472,000, UNDRO will continue to provide air transport service to emergency relief personnel.

■ **Peru - Earthquake:** Following an earthquake measuring 5.8 on the Richter scale, which occurred in Northern Peru affecting the provinces of San Martin, Cajamarca and Amazonas, UNDRO received a request for shelter materials and medicines from the Government, and issued a total of seven Situation Reports between 31 May and 24 June. Contributions reported to UNDRO from inter-governmental organizations, governments and non-governmental organizations totalled US $2.8 million.

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❐ **Drought:** On 8 June, UNDRO launched an international appeal for assistance to drought-stricken Peru, on behalf of the Secretary-General, for a six-month emergency programme (15 June-15 December 1990). The appeal was based on the report of an inter-agency mission led by UNDRO. On 31 July, the donor community's response, as reported to UNDRO, amounted to US $16,173,675.

■ **Philippines - Earthquake:** On 16 July, a severe earthquake measuring 7.7 on the Richter scale, struck Luzon island in the Philippines. The earthquake caused major destruction in several cities and large scale damage to infrastructure. At the end of July the official list of casualties following the earthquake showed 1,600 dead and 3,300 injured. On 17 July the Philippine Government requested UNDRO to launch an appeal for international assistance in the relief efforts. As of 31 July, 16 governments and 19 inter-governmental organizations and NGOs had reported contributions to UNDRO. The total value of this assistance reached US $3.4 million, including an UNDRO emergency grant for local purchase of relief materials. The ongoing situation was closely monitored through the UNDP/UNDRO Representative in Manila, and during the period from 16 to 31 July, UNDRO issued six Situation Reports.

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❐ **Typhoon:** Two Information Reports were issued by UNDRO, following typhoon "Ofelia" which hit Northern Luzon on 22 June. Fifty-six people died and 160,000 people were affected. Infrastructure and agricultural crops were severely damaged. No request for international assistance was received by UNDRO.

■ **Turkey:** Following serious floods caused by heavy rains in the Northern Turkish provinces of Trabzon, Giresun and Gumushane since 19 June, UNDRO issued two Information Reports. Thirty-six persons were reported dead. Houses, roads and other infrastructure were severely damaged. No request for international assistance was received by UNDRO.

■ **Viet Nam:** UNDRO issued two Situation Reports on severe floods which occurred in Northwest Viet Nam following torrential rains since the end of June. Reports estimated that some 131 persons died, 200 were injured and 2,600 ha of rice-cultivated land were destroyed. Most immediate emergency requirements, for more than 10,000 affected people, included basic food, survival items, medical supplies and construction materials.

■ **Pan Caribbean Disaster Preparedness and Prevention Project (PCDPPP):** An independent evaluation of the project's achievements, and, in particular, a proposal for future UNDRO activities in the Caribbean, has just been completed by an UNDRO consultant, within the framework of a programme document covering the last phase (1988-1990) of the PCDPPP.

The consultant's recommendation for the future is to replace the approach of a short-term project (PCDPPP has in fact been a series of short-term projects) by that of a long-term programme (some fifteen years) in order to reduce the impact of disasters. A final draft of the report, which was presented to UNDRO in early July, will be submitted to the PCDPPP Advisory Board in October 1990.

■ **Pise**: UNDRO a reconduit un contrat, signé une première fois fin 1989, avec la Société Générale de surveillance (SGS), relatif à la mise en place d'un contrôle de qualité des biens de secours stockés dans l'entrepôt de l'UNDRO à Pise, Italie.

Ce contrôle, qui concerne toutes les marchandises transitant par l'entrepôt, a permis d'améliorer la qualité de plusieurs articles (notamment celle des couvertures dont le stock est le plus important en quantité), ainsi que celle de l'emballage. Des visites effectuées dans les entreprises au moment de la fabrication, qui permettront de s'assurer de la conformité des produits commandés, font partie de ce nouveau contrat.

DISASTER MITIGATION

■ **Algeria:** Arrangements are being made by UNDRO for a consultant to help Algerian technicians of the Center for Seismic Engineering (Centre de Génie Parasismique) finalize the draft of a manual addressed to small builders on how to improve building capacity to withstand seismic shocks.

■ **Arab States:** UNDRO participated actively in a joint meeting between representatives of the United Nations system and the League of Arab States and its specialized

(Continued on page 16)

The Decade: A Catalyst for Action

by Shirley Mattingly
Director of Emergency Management
City of Los Angeles

Reducing the loss of life and property due to natural disasters, the primary goal of the International Decade for Natural Disaster Reduction, is both an irresistible mission and an overwhelming task. The challenge of the Decade, however, must not discourage modest or local efforts. Indeed, if local communities do not embrace the Decade concept, a unique opportunity will have been squandered. The Decade will pass unnoticed by millions of people who will enter the new century as vulnerable to disasters as they were in 1990, if not more so.

In Los Angeles, numerous programmes have been undertaken by local government, schools and the business community, to reduce hazards and vulnerability. Popular support in the community for these hazard reduction programmes was evidenced by a June 5, 1990 election, when the city's voters, by a 72% favorable vote, assumed a US $376 million bonded indebtedness to raise money to reinforce, repair and replace city-owned buildings, roads and bridges in need of earthquake safety improvements. Author of the measure, City Councilman Richard A latorre, commented succinctly after the Loma Prieta (California, 1989) earthquake, "If we learned anything from [that] earthquake, it is the need for prevention."

American Red Cross Society

Loma Prieta, California, earthquake, October 1989.

In spite of the many programmes underway to reduce the city's vulnerability to disasters, many segments of the population and the economy remain at risk and increased protective measures must be

taken. Therefore, Los Angeles is viewing the Decade as a unique catalyst for action throughout its governmental, business, scientific and academic communities and in its diverse neighbourhoods. The leadership of Mayor Tom Bradley, a member of the U.S. National Committee for the Decade, is providing the impetus for action.

In Los Angeles the Decade has a dual focus: First, to achieve effective mitigation of local hazards from within, and second, to enhance our collaboration and information exchange with other agencies, cities and regions facing like hazards and challenges.

Our view is that it is primarily up to us at the local level to achieve awareness and understanding of our risks and to encourage support throughout the community for diverse mitigation and protection measures. It is primarily our local responsibility to seek and support loss prevention measures, and, in the aftermath of a disaster, to manage effectively the recovery of our social and economic systems.

At the same time, we wish to contribute both locally and internationally to the improvement of public policy in regard to hazard reduction through exchange programmes and joint efforts to enhance the application of academic knowledge in public practice. Our first Decade strategy was to review progress to date, identify gaps and needs, intensify successful existing programmes, and brainstorm new ideas, activities and programmes.

In June 1990, the City held a consensus-building workshop involving participants representing 40 agencies and organizations. The purpose of the workshop was to identify a wide range of action programmes for the Decade, creating the basis for a ten-year work plan - a decade's worth of work for our interdisciplinary Emergency Operations Organization. The results far exceeded our expectations: the workshop gave us 206 ideas for new approaches to enhancing preparedness, public education and awareness, mitigation, and recovery capability. A work plan establishing priorities among these proposals is currently being developed.

This group process, involving broad participation of City agency heads, as well as private sector and non-governmental organization representatives, is characteristic of Los Angeles' approach to preparedness, response and mitigation. The payoff from this process is greater co-operation and collaboration on the multi-disciplinary problems presented to the City by the threat of a catastrophic or near-catastrophic earthquake. It also ensures that a wide range of programmes can be pursued concurrently.

While the City's complete Decade-long work plan is being developed, several programmes are already underway or being put forward. For example, the City has submitted a modest grant proposal for a Decade project which would provide outreach to the Los Angeles area's small business firms, through meetings, a brief training video tape, printed brochures and checklists, and video and audio public service announcements in two languages. The purpose of the project is to encourage preparedness for resumption of operations in the aftermath of a disaster so that they will not go out of business. Concurrently, Los Angeles' voluntary business self-help organization, BICEPP (The Business and Industry Council for Emergeny Planning and Preparedness) is developing a Decade programme to provide direct emergency planning assistance to other business firms.

In terms of our second focus for the Decade, that of collaborating and exchanging information with other areas facing similar hazards, Los Angeles is beginning by engaging in direct bilateral information exchange with a major U.S. city and a major Latin American city. These efforts are expected to include meetings involving public officials and private sector representatives from many disciplines. In enhancing its ties with the academic community, the City will, with other jurisdictions and agencies, cosponsor in July 1991, an international conference organized by the University of California at Los Angeles, to bring together public policy officials and the research community.

The projects which are mentioned here provide only a brief glimpse of what will be a broad range of programmes attributable to the Decade. In Los Angeles it was merely the idea of the IDNDR which provided the incentive for undertaking a strategic planning process to direct and focus its disaster mitigation and preparedness efforts over the next ten years. Further, the Decade provided the impetus to strengthen ties with other communities.

Starting as an inspiration, the International Decade for Natural Disaster Reduction is a catalyst for one city to turn good intentions into concentrated, focused, results-oriented actions.

■

Toward More Effective Early Warning Systems

Achievable Improvements during IDNDR

During the coming decade a number of improvements in forecasting, application of new technology and more refined warning systems are expected to take place, a number of which should be valuable in meeting the objectives of the IDNDR. Examples are summarized as follows:

■ *Tropical Cyclone Reconnaissance*

Despite the advances in satellite technology, precise information about a cyclone's position, movement and intensity is only possible through direct observation. An Australian airborne reconnaissance facility would be a major benefit as well as being effective in the Western Pacific and Indian Ocean region. The type and extent of such a facility will depend upon further analysis of benefits and costs. Studies within the Bureau of Meteorology, including a review by an overseas consultant, indicate that increases in initial position accuracy and assessment of intensity would result in major savings, particularly in reduction of over-warning costs, by reducing the segment of coastline under the direct warning.

■ *Tropical Cyclone Workstation*

A major initiative within the Bureau of Meteorology's Severe Weather Warning Program is the development of a tropical cyclone forecasting workstation based on a powerful micro-computer which may either stand alone or be linked to other computers and data bases. The workstation was demonstrated at an international WMO Workshop in Manila in November 1989, and a station of this type has been recommended for adoption as an international standard. It is expected that most countries in the Pacific and Indian Ocean areas and Southeast Asia will use the system, and it is suggested that the project would be a significant and valuable component of Australia's contribution to the IDNDR. More timely and accurate issuing of warnings in particular would have significant social and economic impact in reducing the effect of natural disasters.

■ *Coordination of Tropical Cyclone Warning Services*

Australia is a member of the Tropical Cyclone Committee of the Southwest Pacific. This Committee is increasingly active in promoting effective tropical cyclone warning services to respective governments and has already produced a coordinated operations plan. It is expected that the Committee will play a significant role in promoting improved tropical cyclone warning services and community response to them during the coming decade.

■ *Consultancy and Training*

There is a high level of expertise in meteorology, hydrology and systems analysis which the Bureau of Meteorology could contribute to surrounding countries. Already there have been a number of consultancies undertaken; e.g. to Fiji, and operational forecasters from Pacific countries participate in severe weather workshops conducted by the Bureau. In addition there is the capacity to assist in maintaining vital monitoring equipment. The transfer of professional skills to neighbouring countries should be an important objective of the IDNDR.

Development of Effective Warning Systems

To design an effective warning system it is necessary to consider the true nature of disasters as revealed by rigorous disaster research, and to eschew the myths of human behaviour in such events. Whilst the psychology of response to natural disasters lies outside the responsibility of meteorological services, some understanding of the subject is useful in the development of effective warning systems, for interacting with counter-disaster authorities and for assessing the likely response to severe weather warn-

ings. The Office of the United Nations Disaster Relief Co-ordinator has identified a number of myths associated with human response in disaster situations:

- "Panic and flight occurs" - People actually stay in potentially threatened situations rather than leave, but if they do leave, they do so rationally and as family units.

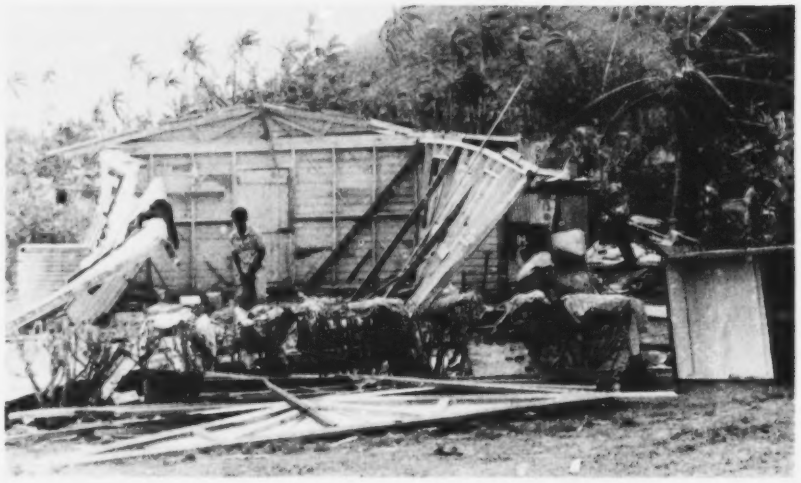
- "People are helpless" - Instead, the immediate response of survivors is active participation in constructive actions including rescues.

- "People are paralysed by trauma". Whilst some stress reactions do occur they do not affect the willingness and ability of people to respond well during the recovery phase.

- "People behave in an anti-social manner". People who are not inclined to commit anti-social acts before a disaster are not inclined to do so after the disaster.

- "Communities are shattered". In fact communities become cohesive with high morale resulting in altruism and support of friends, relatives and associates *(UNDRO Vol. 12 : 13-16).*

Any doubts of the fallacy of the myths can be dispelled by reading Roger Wettenhall's book where he describes the actions of the people of Tasmania as they coped with the bushfire disaster of 1967. Also, the difficulties facing meteorologists who have prepared an accurate and timely forecast and warning, designed to elicit some action on the part of the total community, is well illustrated by Wettenhall who demonstrated beyond doubt that more



O.H.M.S. Fiji Official/Dept. of Information

Damage to houses caused by cyclone in Fiji Islands

must be done than just the issuing of a warning. The scene in Hobart was set by Wettenhall. The main headline in the Hobart morning paper read:

"Fires still burning on Tuesday morning will be impossible to hold during the day. They will burn freely and travel long distances due to spot lighting ahead of the main fire".

Wettenhall described the reaction as to this warning as follows:

"Having calmly read their papers or listened to news broadcasts which carried similar messages, Hobartians therefore went off for a normal day's work" (Wettenhall 1975: 72-73).

To be effective, warning systems need to be designed in consultation with disaster managers and experts to recognize and take advantage of the actual behaviour of people in and before disasters. Our reading indicates that in general, structures that existed before a disaster are the most effective as they have well established personal and electronic communication networks already in place.

National Weather Services will need to recognize the emergence of some problems as they go about their business of providing information in times of great need. For example, it is essential to ensure that all, including the public, who wish and/or need to receive warnings and forecasts have access to them.

"The ultimate goal of a warning system is to influence people to take precautionary action. A warning provides the opportunities for people to prepare for the impact of a hazard. A disaster warning is evaluated according to its ability to motivate actions to minimize loss of life and social disruption" (UNDRO Vol. 12 : 34). ■

Excerpt from a paper published in AODRO Newsletter Vol. 8 , No. 1, March 1990, prepared by Peter Noar, David Packham and Linda Drosdowsky.

UNDRO at Work

(Continued from page 11)

institutions, held in Geneva from 18 to 20 July 1990. The first objective was to review co-operation and appraise the progress achieved in the last two years. The second objective was to consider a series of proposals for a two-year programme of action, submitted by the LAS.

Special attention was given to the forthcoming seminar on Natural Disaster Prevention and Preparedness in the Arab States organized by UNDRO in collaboration with the Council of Arab Ministers of the Interior, to be held in Tunis in October 1990.

■ **Iran - Preparation for Reconstruction:** UNDRO assisted UNDP in co-ordinating a four week multi-agency mission in August, composed of engineers and urban planners, to identify, in consultation with national technical authorities, the specific subjects on which international assistance could be most appropriately given, and to formulate a project document for the provision of such assistance.

Following the request conveyed to the Secretary-General by the Iranian Ambassador in New York, the Co-ordinator of UNDRO has been asked to continue as Special Representative of the Secretary-General for the rehabilitation and reconstruction phase in Iran.

■ **Nepal:** An UNDRO representative carried out a mission to Nepal from 5 to 10 June to discuss with the Home Ministry and UNDP, continuation of current project activities beyond project termination in December 1990, and future disaster mitigation activities in Nepal. During these meetings it was decided to extend the present project until December 1991.

■ **Philippines:** An UNDRO delegate undertook a mission to Manila in June to participate in a tripartite (National Government/UNDRO/UNDP) review meeting for a Disaster Management Training Project. All project activities have been undertaken as scheduled and overall satisfaction was expressed for the assistance the Asian Disaster Preparedness Centre at the Asian Institute of Technology in Bangkok had provided for the National Workshops organized within the scope of this project.

■ **Thailand:** An UNDRO representative visited the Asian Disaster Preparedness Center at the Asian Institute of Technology in Bangkok in June. Discussions were held with substantive staff at ADPC about their inputs for the two UNDRO/UNDP projects in the Philippines and future UNDRO/ADPC/UNDP project activities.

■ **Disaster management planning for China:** A five-member, high-level delegation from the People's Republic of China, representing the Ministries of Civil Affairs and Finance, visited IDNDR and UNDRO in Geneva during the last week of July to discuss the setting up of a China Integrated Disaster Management Center (CIDMC). A project for reducing the impact of typhoons in Hainan, of floods in the Jang Tse River, and for an earthquake scenario in a medium city still to be identified, have been discussed.

■ **SEISMED - UNDRO/UNDP Project for Seismic Risk Reduction in the Mediterranean:** Following the Project's first workshop on seismic hazard assessment, the documentation presented by the participating countries is being edited and revised for the finalization of workshop proceedings.

A working group on seismic vulnerability assessment recently met in Genoa, Italy, and prepared guidelines for the Project's second workshop which is due to take place in Trieste, Italy, in early December 1990.

■ **Southwest Pacific Disaster Mitigation Project:** A survey mission was recently carried out in the Southwest Pacific region by a group of consultants, under the auspices of UNDRO. The purpose of the mission was to determine the disaster mitigation requirements of several of the countries in the region, which are subject to various types of disasters. Six countries were visited by the consultants: Fiji, Papua New Guinea, Western Samoa, Tonga and Vanuatu. Consultations were also held with representatives of Tokelau in Western Samoa.

The reports of the consultants are now being studied by UNDRO and the formulation of an integrated disaster management work programme for this area, based on the results of the mission, is currently underway.

■ **Course on Health and Disasters:** An UNDRO staff member was invited to provide a contribution to the third International Course on Health and Disasters organized by the Center for Research on the Epidemiology of Disasters, at the University of Louvain, Belgium, on 9 July. The contribution focused on the role of health in intersectoral pre-disaster planning with special reference to Western Samoa in the South Pacific.

INFORMATION, COMMUNICATIONS, EXCHANGE OF VIEWS AND CONTACTS

■ **Economic and Social Council (ECOSOC):** The Disaster Relief Co-ordinator presented the Secretary-General's report on the work and activities of UNDRO, covering the biennium 1988-1989, to the summer session of the Economic and Social Council, which took place in Geneva from 4 to 27 July. Government representatives who subsequently took the floor acknowledged UNDRO's efforts and efficiency in the field of relief and mitigation and provided advice for future activities.

ECOSOC also adopted, by consensus, a resolution on "Special Disaster Relief Assistance to the Islamic Republic of Iran", in the aftermath of the 1990 June earthquake. The resolution calls for the mobilization of international assistance to help the Government and the people of Iran in their efforts towards the rehabilitation and reconstruction of the stricken areas.

■ **Chernobyl:** Following the adoption by ECOSOC of a resolution on "International Co-operation for the Elimination of the Consequences of the Accident at the Chernobyl Nuclear Power Plant", Mr. Masyk, Deputy Prime Minister of the Ukranian SSR, and Mr. Kichkallo, Deputy Prime Minister of the Byelorussian SSR, accompanied by the Permanent Representatives of the two Republics in

Geneva, called on the Disaster Relief Co-ordinator on 13 July 1990. Mr. Essaafi stressed the need for concerted action by the United Nations system for the eradication of the consequences of the disaster, under the overall co-ordination of the Economic Commission for Europe. UNDRO would be ready to participate in such an effort. The Co-ordinator also highlighted the importance of disaster prevention and preparedness and the role to be played by UNDRO in that regard.

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❐ An inter-agency meeting on Chernobyl was convened in Geneva on 25 July, by the Director General for Development and International Economic Co-operation, New York, Mr. A. Bianca. The purpose of the meeting was to discuss the UN agencies' role following the ECOSOC resolution, which has been signed by 70 members, asking the Secretary-General to submit a comprehensive report to the next General Assembly.

■ **Organization of African Unity (OAU): A delegation from the OAU** headed by its Secretary-General, Mr. Salim Ahmed Salim, visited UNDRO on 12 July, and was received by the Disaster Relief Co-ordinator and the Director. Strengthening of future co-operation and the prospect of a Memorandum of Understanding between UNDRO and the OAU were discussed.

■ **Visit of a High-level Japanese Delegation:** The Delegation, headed by Mr. Y. Mitsubayashi, Chairman of the Disaster Management Committee of the House of Representatives and former Minister of the Science and Technology Agency, visited the UNDRO Pisa Warehouse on 20 July.

The Japanese delegation then proceeded to UNDRO's headquarters in Geneva, where it was received by the Disaster Relief Co-ordinator on 23 July. Global emergency relief activities and strengthening of future co-operation between the Japanese Government and UNDRO were discussed.

■ **International Search and Rescue Workshop:** Following the recommendations of the Third Meeting of Officials in Charge of National Emergency Relief Services (NERS III), UNDRO is planning to hold an International Search and Rescue Workshop in the beginning of 1991, in order to exchange experience between teams and create mechanisms for future international co-operation within this field. The Director of UNDRO, accompanied by an UNDRO official, met with Austrian Government officials in July to discuss the possibilities for the workshop to be hosted by the Government of Austria.

■ **International Seminar on "Earthquake Disasters in Large Cities":** This seminar was organized by UNDRO in co-operation with the Colombian Office for Disaster Prevention and Response, PAHO, UNDP and the Colombian Society of Engineers, in Bogota from 24 to 27 July 1990. The meeting was attended by over 400 participants from 16 countries of North, Central and South America, Europe and Asia.

■ **UNDP/UNDRO Disaster Management Training Strategy:** UNDP and UNDRO jointly organized and chaired a meeting for donor representatives on 13 June 1990, at UNDRO headquarters in Geneva, to present the principles of the UNDP/UNDRO strategy on disaster management training. Participants were welcomed by Mr. F. Mayrhofer-Grunbuhel, Director of UNDRO, and by Mr. Nissim Tal, Director of the Planning and Co-ordination Office, UNDP/N.Y., who briefly summarized the ongoing process between both offices to strengthen their collaboration in the area of disaster relief and preparedness. The meeting was also addressed by Mr. Michael Priestley, Special Representative of the Secretary-General for Sudan, who spoke about his experience in disaster management in the Horn of Africa and by Mr. Philip Sargisson, Head of the Training Service of the Office of the United Nations High Commissioner for Refugees (UNHCR), who explained the aims of disaster management training strategy. Further discussion focused on questions related to the financing of the project, and on the participation of other UN agencies.

■ **International Decade for Natural Disaster Reduction (IDNDR):** The Secretary-General has appointed Mr. N.S. Merani *pro-tempore* Director of the Secretariat of the IDNDR, as of 1 June 1990. At the time of his appointment, Mr. Merani was Director for Policy Development and External Relations at the United Nations Environment Programme.

* *** *

❐ The sixth meeting of the UN Steering Committee for the IDNDR was held in Geneva on 6 June 1990, under the Chairmanship of Mr. A. Bianca, Director-General for Development and International Economic Co-operation, New York.

■ **Visitors to UNDRO's Headquarters in Geneva** during the months of June and July included: Mr. Carlos Garcia Garcia, Vice-President of Peru; Ms. Fametta R. Osode, Minister Counsellor, Chargé d'Affairs, a.i. of the Mission of Liberia; Messr. J.J. Paradis, Sous-Ministre Associé, Ministère de la Securité publique and P. Leguerrier, Directeur général de la Société canadienne de la Croix-rouge (Division du Quebec); Mr. K. Kiyono, Executive Director of the Japan Firemen's Association and Mr. I. Ikeguchi, Director of the JFA; and Dr. I. Galli, recently appointed Chief of Emergency Preparedness and Response, (WHO).

■ **UNDP/UNDRO Resident Representatives from Iran, Liberia, Mauritius and Sudan** visited UNDRO in June and July to give an update on the situation in their countries and to be briefed on the activities of the Office.

■ **The Chief of the Relief Co-ordination Branch** gave a lecture on 17 July to 120 participants of the 28th Geneva Graduate Study Programme. The subject of the Programme for this year was "Global Security, Development and Human Rights".

■ **Film on the UNDRO's Pisa Warehouse:** A film presenting the role and the activities of the Pisa Warehouse has just been completed. ■

Lack of space has prevented us from publishing the list of goods stocked in UNDRO Warehouse in Pisa. Please refer to the May/June 1990 issue of UNDRO NEWS.

Medical Care for Earthquake Victims

(Continued from page 7)

located. They must have some knowledge of what specific types of injuries to expect as well as how to estimate relative injury severity and prognosis. The latter is essential for effective triage. Severe dust inhalation with resultant pneumonitis is an important problem for victims of building collapse. Therefore on-site rescue and medical personnel should be well-versed in techniques of airway management and oxygen administration. Optimally, they should know how to stabilize the cervical spine and start intravenous lines and administer life-saving fluids and medications. They must also be able to recognize and treat problems of prolonged limb compression such as compartment syndrome and crush syndrome. These conditions require immediate attention and cannot wait until the victim has been completely extricated and transported to a treatment area.

In particular, they must be aware of the potential for acute renal failure associated with rhabdomyolysis and should carry the appropriate fluids and medications to treat this condition. Rescue personnel must be prepared for rapid deterioration of patients upon extrication due to decompression of limbs, shock, electrolyte abnormalities and metabolic acidosis.

Efforts to remove occupants from a collapsed building may expose rescuers and on-site medical personnel to dangers similar to those faced by the victims. Rescue and medical personnel must constantly observe all safety precautions to protect themselves from injury. For example, the destruction of buildings and industrial facilities by any catastrophe will invariably result in ruptured electrical, water, gas, and sewer lines. Other hazards will be escaping gases and chemicals used in refrigeration units and in certain industrial operations. These utilities create serious problems for casualties and rescue personnel. Each person on the team must be knowledgeable regarding these potential hazards and trained to be alert to any change in conditions at the collapse site that could raise an additional threat to their safety. Rescue personnel should also be instructed in the proper method for shutting off water, gas, and electricity, and be informed of the probable locations of shutoff valves and master switches.

El Salvador, earthquake 1986. ASC/Jean-Philippe Jutzi

Research on rescue methods and medical treatments for victims of building collapse is currently underway at several centers. These include a systematic comparison of the many existing techniques of search and rescue, including a controlled evaluation of equipment and techniques (e.g., efficacy of dogteams; remote sensing equipment, portable seismographs, borehole cameras, infrared detectors, carbon dioxide sensors, etc.) Others are studying the functional requirements of search and extrication devices, including the development of performance specifications for devices which will penetrate a collapsed structure to detect or reach a victim.

Conclusions

It has become apparent from past building collapse events such as those in Mexico City and in Armenia that some principle for effective collaboration and compatible organization of rescue and disaster medicine teams is required. Training and education standards for rescue and disaster medicine personnel must be developed for effective response to earthquakes. The development of joint training for rescue and medical teams should lead to greater co-ordination and effectiveness in future earthquakes. ■

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UNDRO PUBLICATIONS

English (E), French (F), Spanish (S), Arabic (A)

DISASTER PREVENTION AND MITIGATION
UNDRO/UNEP Compendium of Current Knowledge
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	10.-	Disaster and the Disabled (E/F/S)	E.82.III.M.1

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